2.9 CULTURAL RESOURCES

The following discussion is based upon an archaeological resources assessment prepared for the site by *Basin Research Associates* in March 2006. This report is on-file and available for review at the City's Community Development Department.

2.9.1 Setting

2.9.1.1 Archaeological Resources

The project is located at an infill site in Sunnyvale. There are no recorded archaeological sites listed in or eligible for inclusion on either the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR) within the project area. or reported cultural resources located in or near the project site. One prehistoric archaeological site, CA-SCl-9, has been recorded as straddling the southwest corner of the project site area. However, no evidence of this site was observed during field surveys, and the area around the mapped location of CA-SCl-9 has been previously impacted by development and infrastructure, including an underground drainage culvert, power line towers, parking and infrastructure associated with the nearby office/R&D building.

2.9.1.2 Historic Resources

According to the City's Cultural Resources Inventory, there are no architectural or historically significant structures, significant trees, or local landmarks located on the site.[13] No State and/or Federal historically or architecturally significant structures, landmarks, or points of interest are located on or adjacent to the project site[14]

2.9.2 Cultural Resources Impacts

2.9.2.1 Thresholds of Significance

For the purposes of this project, a cultural resources impact is considered significant if the project will:

- Cause a substantial adverse change in the significance of a historic resource as defined in §15064.5 of the CEQA Guidelines;
- Cause damage to an important archaeological resource as defined in §15064.5 of the CEQA Guidelines;
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or
- Disturb any human remains, including those interred outside of formal cemeteries.

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[13] City of Sunnyvale. Heritage Resource Inventory. December 2004.
City of Sunnyvale. Local Landmarks. September 2004.
[14] State of California. Office of Historic Preservation. 30 March 2005.
http://ohp.parks.ca.gov/default.asp?page_id=21522.
National Park Service. National Register of Historic Places. 30 March 2005.
http://www.cr.nps.gov/nr/research/nris.htm.
Lynch, Steve. City of Sunnyvale. Personal Communications. April 2005.

2.9.2.2 General Plan Amendment and Specific Development Project Impacts

There are no recorded archaeological sites within the project site. In addition, no listed, determined or pending local, State of California, or California Register of Historic Resources historic properties were located on or adjacent to the proposed project site.

Archaeological Resources

As mentioned above, there are no recorded archaeological sites listed in or eligible for inclusion on either the NRHP or the CRHR within the project area. One prehistoric archaeological site, CA-SCl-9, has been recorded as straddling the southwest corner of the project site area. However, no evidence of this site was observed during field surveys, and the area around the mapped location of CA-SCl-9 has been previously impacted by development. For this reason, construction of the proposed uses is not anticipated to result in the disturbance of any known buried archaeological resources. There is the potential, however, that unknown resources could be discovered during project construction, pile driving, or grading activities. Disturbance to such resources, should any be found, would be a significant impact.

IMPACT CULT-1: Development of the project site could result in a significant impact to buried cultural resources which could be present on the site. (Significant Impact)

Historic Resources

The existing industrial buildings on the site were constructed in the 1960s and 1970s and are not considered historically significant. In addition, no other listed, determined, or pending local, State of California, or California Register of Historic Resources historic properties are located on or adjacent to the project area. For these reasons, the project would not impact historic resources.

IMPACT CULT-2: Development of the project site would not impact historic resources. (No Impact)

2.9.3 General Plan Policies and Actions

The policies and actions of the City of Sunnyvale General Plan have been adopted for the purpose of avoiding or mitigating potential environmental effects resulting from planned development within the City. The City of Sunnyvale General Plan *Cultural Element* (adopted 1993) contains policies and action statements related to cultural resources. Conformance with the following General Plan policies and actions from the *Cultural Element* will reduce or avoid cultural resources impacts:

Policy 6.3B.3 states that where the achievement of the public purpose of preservation imposes excessive burdens upon the owner or owners of property affected, the City should consider appropriate measures to mitigate those burdens. Where special financial incentives toward preservation can be made available, the City should endeavor to meet eligibility requirements.

Action Statement 6.3B.3.a Where the significance of a landmark warrants, cooperate to have it placed on appropriate State or Federal register.

Action Statement 6.3B.3.b calls for cooperation in the documentation required to make a landmark property eligible for tax relief.

Action Statement 6.3B.3.c calls for consideration, where appropriate, of the acquisition of facade easements, development rights, or other less than fee interests, both to add to the property's protection and to mitigate any burden on its owner.

Action Statement 6.3B.3.d calls for cooperation in finding "adaptive reuses" for landmark properties which will allow a reasonable economic return yet be compatible with surrounding uses

2.9.4 Mitigation and Avoidance Measures

The project proposes the following measures to reduce potential impacts to archaeological resources to a less than significant level:

MITIGATION MEASURE CULT-1: Prior to the initiation of construction or ground-disturbing activities at the southwest corner of the East Sunnyvale ITR project, a qualified professional archaeologist shall undertake a presence/absence testing program to identify the horizontal and vertical extent of any potential buried archaeological deposits associated with CA-SCl-9 or other as yet unknown cultural resources at this location within the project parcel. The testing program shall be implemented with the results presented in *Presence/Absence Testing Report* commensurate with the findings. Any recommendations for treatment of a significant resource shall be presented in the report.

MITIGATION MEASURE CULT-2: Prior to the initiation of any construction that has the potential for ground-disturbing activities within the GPA project area, the project proponent shall inform all construction personnel of the potential for exposing subsurface cultural resources at the project components and to recognize possible buried cultural resources. Personnel shall be informed of the procedures that will be followed upon the discovery or suspected discovery of archaeological materials, including Native American remains and their treatment.

MITIGATION MEASURE CULT-3: Archaeological monitoring on a full-time basis by a Professional Archaeologist shall be undertaken during any subsurface construction that disturbs native sediments within and within a radius of 100 feet to CA-SCl-9. The archaeologist shall maintain a log of his/her observations and complete a *Monitoring Closure Report* at the completion of monitoring detailing any observations.

MITIGATION MEASURE CULT-4: Archaeological monitoring on less-than-full time basis with the frequency and duration to be determined by a Professional Archaeologist shall be undertaken during any subsurface construction that disturbs native sediments within the East Sunnyvale ITR parcel. The archaeologist shall maintain a log of his/her observations and complete a *Monitoring Closure Report* at the completion of monitoring detailing any observations.

MITIGATION MEASURE CULT-5: Excavation contracts for development shall contain provisions for stop-work in the vicinity of an archaeological find in the event of the exposure of significant cultural resources during 15 subsurface construction. In addition, the contract documents shall recognize the need to implement any mitigation conditions required by permitting and regulatory agencies. In general, the appropriate construction conditions should be included within the *General Conditions* section of any contract that has the potential for ground disturbing operations.

MITIGATION MEASURE CULT-6: If any unanticipated prehistoric or significant historic era cultural materials including Native American burials are exposed during construction grading and/or excavation, operations should stop within a minimum of 10 feet of the find to avoid altering the cultural materials and their context and a qualified Professional Archaeologist retained for identification, evaluation and further recommendations. The Community Development Director of the City of Sunnyvale shall be notified of the discovery. Construction work shall not begin again within the find area until the archaeologist has been allowed to examine the cultural materials, assess their significance, and offer proposals for any additional exploratory measures deemed necessary for the further evaluation of, and/or mitigation of adverse impacts to, any potential historical resources or unique archaeological resources that have been exposed

If the discovery is determined to be a unique archaeological or historical resource under the criteria of the *California Register of Historical Resources* after review and evaluation by a Professional Archaeologist, and if avoidance of the resource is not possible, the Professional Archaeologist shall develop plans for treatment of the find(s) and mitigation of impacts acceptable to the City of Sunnyvale. The treatment plan shall be designed to result in the extraction of sufficient non-redundant archaeological data to address important regional research considerations. The project proponent shall make every effort to insure that the treatment program is completed. The work shall be performed by the archaeologist, and shall result in a detailed technical report that shall be filed with the California Historical Resources Information System, Northwest Information Center. Construction in the immediate vicinity of the find shall not recommence until treatment has been completed.

If human remains are discovered, they shall be handled in accordance with State law including immediate notification of the Santa Clara County Medical Examiner.

2.9.5 Conclusion

CULT-1 With the implementation of the above mitigation measures, the proposed project would not result in significant impacts to cultural resources. **(Less Than Significant Impact with Mitigation)**

CULT-2: Development of the project site would not impact historic resources. **(No Impact)**

2.10 VISUAL AND AESTHETICS

2.10.1 Setting

2.10.1.1 Visual Character of the Project Site and Surrounding Area

The approximately 130-acre project site is located within a developed urban area of Sunnyvale and is developed with a variety of existing industrial and office uses, landscaping, and surface parking lots. The existing buildings on the site range from one to three (?) stories tall, with maximum building heights of approximately 55 feet. Mature trees and landscaping are present along the Duane Avenue and Stewart Drive site frontages and around the buildings. Trees are also planted within the parking lot areas. Other than the mature trees along the site frontage, the project site does not contain significant visual or aesthetic resources, and the site itself is not part of a scenic view corridor.

The project site is surrounded by Duane Avenue to the north and northeast, and by Stewart Drive to the southeast and south. Duane Avenue is a four-lane roadway, and Stewart Drive is a two-lane roadway. The adjacent residential neighborhood to the north consists of single-family detached homes, with heights of approximately 25-35 feet. The commercial and industrial office buildings south of the site are surrounded by parking lots and landscaping, and include buildings ranging from 25-35 feet in height.

2.10.1.2 Views of the Project Site from Surrounding Area

The site and the surrounding area are generally flat and, as a result, the site is only visible from the immediate area. Views of the site are mostly available from Duane Avenue, Stewart Drive, and the immediate surrounding land uses. The northeastern portion of the project site (Subarea 1, refer to Figure 4) is visible from Lawrence Expressway. In general, views of the overall site from Lawrence Expressway and US 101 are screened by the existing topography, other land uses, and the large trees located along the street frontage. Photos 1-14 show existing views of the project site from several vantage points in the immediate area.

2.10.1.3 Allowable Development Under Existing General Plan and Zoning Designations

While the CEQA Guidelines (Section 15125) require a comparison of the proposed project with the existing physical environmental conditions as they exist at the time the Notice of Preparation is published, it should also be noted that, under the current General Plan and zoning designations applicable to the site, all or portions of the site could be redeveloped with new buildings with maximum allowed building heights of 75 feet (eight stories). This amount of development would be required to be set back at least 25 feet from the Duane Avenue and Stewart Drive property lines.

Redevelopment of the site under the existing designation would likely be with new or expanded commercial (retail) or industrial uses. If commercial, the square footage would typically be configured into large retail buildings (one or two stories maximum), with the remainder of the site as landscaping and parking. If industrial, there would likely be multiple buildings (at one or two stories in height), with the remainder of the site as landscaping and parking. Although the maximum square footage could be stacked vertically, this is not a likely scenario given the cost of construction for a retail or commercial building and the cost of land in Sunnyvale.

2.10.2 Visual and Aesthetics Impacts

2.10.2.1 Thresholds of Significance

For the purpose of this project, a visual and aesthetics impact is considered significant if the proposed project would:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway;
- Substantially degrade the existing visual character or quality of the site and its surroundings; or
- Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

2.10.2.2 General Plan Amendment and Specific Development Project Impacts

The assessment of a project's visual impact is dependent upon an evaluation of the size, character and design of the proposed development, and the degree to which the project is visually compatible with the surrounding community. The primary criteria that are considered in this assessment include: 1) the spatial relationship of the proposed structures within the site and to neighboring land uses; 2) the mass, scale, and height of the proposed structures and their visibility from the surrounding area; 3) the degree to which the project would contrast with the surrounding development in design and materials; 4) whether the project would damage scenic resources or have a substantial effect on a scenic vista; and 5) whether the project is likely to result in visual impacts including glare, night-time lighting requirements, or provide elevated views to nearby residences.

Change in Visual Character

As described above in the *Setting* section, the project site is located within a developed urban area of Sunnyvale and contains existing industrial uses. The proposed ITR designation on the site would allow for: the continuation or expansion of existing industrial and commercial uses; the construction of new medium- to high-density residential housing; or a combination of both. Therefore, the project would allow for the replacement of some or all of the industrial development on the site with residential development. The future residential development on the site would be medium-density and high-density residential units, in accordance with the City's R-3 (Medium-Density Residential) and R-4 (High-Density Residential) zoning districts. These zoning districts typically include condominiums,

townhouses, and apartments. (Refer to Figure 5 for the locations of the proposed R-3 and R-4 designations on the site.) Parking for the proposed specific residential developments would be provided in surface parking lots and underneath landscaped podiums. Where feasible, the two specific development projects and other future development on the site would allow for preservation of many significant sized trees located along the site frontage within the City's right of way.

Visual Simulation

In order to evaluate the impacts of the project on the present skyline profile and the main existing view corridor, a photographic simulation of the development project on the northeastern portion of the site was prepared to illustrate the proposed building massing and scale in its surroundings. This photo simulation was provided from the vantage point of the Lawrence Expressway and Oakmead Drive/Duane Avenue intersection, looking northwest at the site and adjacent land uses, to illustrate views of the project. Photos 15-16 show this view under existing conditions and with a photographic simulation of how this view would appear with development of the proposed project.

Comparison of Existing and Proposed Development

Residential development on the overall ITR site would be different in mass, height, and appearance than the existing industrial development on the site. Specifically, the proposed Taylor Woodrow residential development project on the northeastern portion of the site would be different in terms of mass and appearance than the existing industrial buildings on this portion of the site (refer to Figures 5, 6, and 7). The change in visual character of the project site would be most noticeable from the adjacent land uses and roadways. The proposed AMD Riding Group and Taylor Woodrow specific development projects would both be visible from Duane Avenue and the existing residential neighborhood to the north. The proposed Taylor Woodrow development project would be the only portion of the project visible from Lawrence Expressway (refer to Photos 15 and 16).

Although the proposed residential buildings would be greater in mass and appearance than the industrial buildings, the site is within a developed urban area, and the project would be similar and compatible with the existing residential, commercial, and industrial uses in the site vicinity. While the Taylor Woodrow residential project would be visible from Lawrence Expressway and Duane Avenue, and would be substantially taller than the adjacent commercial uses, the proposed residential buildings would generally be compatible with the structures in this area of Lawrence Expressway. In addition, the project has been designed to conform to the City's *Design Guidelines*, and the City Council will have architectural review authority for the Taylor Woodrow development project. Since the project includes the preservation of the significant sized trees along the site frontage, views of the project site from the immediate area and surrounding roadways would continue to be partially obstructed by these trees (refer to Photos 1-4 and 8). In particular, views of the project site from the residential uses to the north would be partially blocked by the existing trees along the project frontage (refer to Photos 2 and 3). For these reasons, the project would not result in a significant change in the visual character of the site.

IMPACT VIS-1: The proposed land use change and residential development would change the visual and aesthetic character of the site. However, the site is within a developed urban area of Sunnyvale and is not a scenic viewshed or resource. In addition, the proposed development would be similar in scale to the existing development, and the project proposes the preservation of the mature trees along the site frontage, which screen views into the site. For these reasons, the project would not result in a significant change in the visual character of the site. (Less Than Significant Impact)

Impacts to Visual Resources and Scenic View Corridors

As described in the *Setting* section above, due to the flat and developed nature of the area and the presence of mature trees along the site frontages, views of the site are limited to the immediate surrounding land uses and roadways. Other than the mature trees along the site frontage, the project site does not contain significant visual or aesthetic resources, and the site itself is not part of a scenic view corridor. The proposed AMD Riding Group and Taylor Woodrow specific development projects would be visible from the existing residential neighborhood to the north, however, these specific sites are not part of a scenic view corridor. The development of the proposed project on the site, therefore, would not significantly impact visual resources or scenic view corridors.

IMPACT VIS-2: The project would not impact significant visual resources or scenic view corridors. (Less Than Significant Impact)

Light and Glare Impacts

The existing industrial development currently has outdoor security lighting around the buildings and throughout the surface parking lots. The proposed project would have outdoor security lighting on the site, along walkways, throughout the parking areas, and entrance areas. Low-pressure sodium lighting would be used. This outside lighting would be similar to, but could incrementally increase the level of illumination in the immediate area. The City would require that the outside lighting on the site would be directed in a way not to cause significant glare or light spillover onto adjacent properties. The addition of the project lighting, therefore, would not result in significant light and glare impacts.

The proposed development projects would not be constructed with highly reflective materials. The buildings would not be sited in a parallel alignment, and the surfaces of the buildings would be articulated, not flat, in order to minimize glare from the structures. Adjacent uses to the proposed project are set back from the project site by the roadways surrounding the site (particularly Duane Avenue, Stewart Drive, and Lawrence Expressway), as well as, surface parking lots, and would not be impacted by reflective materials or lighting on the project site.

IMPACT VIS-3: The proposed buildings and outdoor lighting for the proposed project would be designed, located, and directed in a manner to avoid light and glare impacts to surrounding uses. (Less Than Significant Impact)

2.10.3 General Plan Policies and Actions

The policies and actions of the City of Sunnyvale General Plan have been adopted for the purpose of avoiding or mitigating potential environmental effects resulting from planned development within the City. The City of Sunnyvale General Plan *Community Development Element* (adopted 1993) contains policies and action statements related to visual and aesthetics. Conformance with the following General Plan policies and actions from the *Community Design Sub-Element* will reduce or avoid visual and aesthetic impacts:

Community Design Policy 2.5A.2 states that the City should ensure that new development is compatible with the character of special districts and residential neighborhoods.

Community Design Action Statement 2.5A.2c states that the City should encourage infill development or redevelopment which is compatible with the use, density, setbacks, height and, where possible, the predominant building style and size of the surrounding district or neighborhood.

Community Design Action Statement 2.5B.1e states that the City should consider uniform and cohesive landscape themes for districts, major thoroughfares, City boundaries and neighborhoods.

Community Design Action Statement 2.5B.1h states that the City should provide attractive canopy trees in residential districts.

Community Design Policy 2.5C.2 states that the City should ensure the design is compatible with the natural and surrounding built environment.

Community Design Action Statement 2.5C.2d states that the City should require that on-site lighting be energy efficient, unobtrusive and located to minimize off-site glare while providing adequate night time safety.

Community Design Action Statement 2.5C.2i states that the City should require landscaped buffers on commercial or residential properties which provide adequate protection for adjoining residential properties.

Community Design Action Statement 2.5C.2j states that the City should consider prohibiting wing walls or other blank, high walls on buildings in order to create attractive transition zones between buildings.

2.10.4 Mitigation and Avoidance Measures

The project proposes the following measures:

MITIGATION MEASURE VIS-1: The project would conform to City-wide Design Guidelines and policies to further reduce visual impacts. The Design Guidelines and policies include, but are not limited to, the following:

- *Site Design Guideline* states that new development should adhere to the character of the existing neighborhood and be integrated into the surrounding development. New development shall not dominate or interfere with the established character of its neighborhood. Site design of projects shall be cohesive both functionally and visually.

- *Setting Policy A1* states that new projects should be compatible with their surrounding development in intensity, setbacks, building forms, material, color, and landscaping.

- *Setting Policy A3* states that there should be a transition between projects with different uses and intensities to provide a cohesive visual and functional shift. Create transition by using appropriate setbacks, gradual building height, bulk, and landscaping.

- *Setting Policy A6* states to preserve natural site features such as mature trees, creeks, views, etc. and incorporate into the site design of the new project.

- *Building Design Guideline* states that buildings should enhance the neighborhood and be harmonious in character, style, scale, color, and materials with existing buildings in the neighborhood.

- *Site Organization Policy B1* states to locate site components such as structures, parking, driveways, walkways, landscaping and open spaces to maximize visual appeal and functional efficiency.

- *Scale and Character Policy B2* states that adjacent buildings should be compatible in height and scale.

- *Parking Structures Policy B2* states to incorporate both horizontal and vertical articulations in visible facades of parking structures to reduce bulk and mass problems.

- *Parking Structures Policy B4* states to utilize the street level of parking structures for retail uses, or screen by dense landscaping and berming for visual relief.

- *Landscaping Guideline* states that landscaping shall be used to enhance sites and buildings, control climate and noise, create transition between adjacent uses, unify various site components, and define and separate functions and activities.

2.10.5 Conclusion

VIS-1: The project would change the visual and aesthetic character of the site. The site is, however, within a developed urban area of Sunnyvale, and the proposed development would be similar in scale to the existing development in the site vicinity. In addition, the project proposes the preservation of the mature trees along the site frontage, which screen views into the site. For these reasons, the project would not result in a significant change in the visual character of the site. Conformance with the above General Plan policies and actions, as well as the City's Design Guidelines, will further reduce visual and aesthetic impacts. **(Less Than Significant Impact)**

VIS-2: The project would not impact significant visual resources or scenic view corridors. **(Less Than Significant Impact)**

VIS-3: As discussed above, the project would not result in significant light or glare impacts. **(Less Than Significant Impact)**

2.11 UTILITIES AND SERVICE SYSTEMS

2.11.1 Setting

2.11.1.1 Water Service

The following discussion is based on a water system analysis completed by *Mark Thomas and Company* in April 2006 and a water supply assessment (WSA) prepared by *Todd Engineers*. The WSA has been prepared in accordance with the requirements of California Water Code Section 10910 (Senate Bill 610). Please refer to Appendices I and J for the complete reports.

Water is supplied to the City of Sunnyvale area primarily through imported water from the San Francisco Public Utilities Commission (SFPUC) and the Santa Clara Valley Water District (SCVWD). Seven active ground water wells and two backup wells in the City are used as a supplementary source and backup system in the event of a temporary interruption of the imported water. In addition, recycled water produced at the Sunnyvale Water Pollution Control Plant has been used for non-potable use since 1998, and the City requires the use of recycled water when available. Currently, imported water from SFPUC contributes 44.2 percent and SCVWD contributes 41.6 percent of the total water supply for Sunnyvale.

Existing Water Demand and Usage

Water demand in the City of Sunnyvale is divided into five customer types: single-family residences, multi-family residences, commercial/industrial uses, irrigation, and other (including construction, fire, and other uses). The total water demand in the City has been relatively stable over the past ten years, ranging from 22,347 acre-feet per year (AFY) [1995] to 25,592 AFY [2000], with an average of 24,356 AFY. Total water demand in 2005 was 25,300 AFY. Water demand in Sunnyvale was over 30,000 AFY during the late 1980s, however, the demand has decreased significantly through conservation and new plumbing codes requiring water saving devices (i.e., low-flow toilets). Please refer to Appendix J for additional detail regarding the historic water demand in Sunnyvale.

The project site is within the SFPUC supply area. It is estimated that the domestic water usage for the existing uses on the overall site is approximately 140 AFY.

Existing Water Lines

Water is distributed to residences and businesses by the City's Department of Public Works, which oversees a municipal water distribution system consisting of approximately 280 miles of water mains.[15] The existing water distribution system in the site area consists of 10-inch pipes interconnected, or looped, within the existing streets of Duane Avenue, Stewart Drive, North Wolfe Road, DeGuigne Drive, and East Duane Avenue. These 10-inch lines are supplied by and connected to the 16-inch line in Lawrence Expressway at East Duane Avenue, 10-inch lines in Santa Trinita Drive, DeGuigne Drive and North Wolfe Road, eight-inch lines in Fair Oaks, Duane Avenue, San Juan Avenue, Santa Paula Avenue, San Rafael

[15] City of Sunnyvale. Draft Environmental Impact Report for the Downtown Improvement Program Update. March 31, 2003. Page 8-1.

Avenue, San Simeon Avenue, and Santa Ynez Avenue. In addition, there are six-inch line connections to Duane Avenue at San Luisto, San Miguel, San Patricio, and San Pedro Avenues, and there is a connection through a pressure reducing valve from the 30-inch line to the 10-inch line in Duane Avenue at the intersection of Duane Avenue and Britton Avenue, northwest of the site.

The existing water line system has a static pressure of approximately 81 pounds per square inch (psi) near the intersection of Santa Trinita Avenue and Stewart Drive. Flow tests conducted at two hydrants in this vicinity produced flows of 1,414 and 1,443 gallons per minute (gpm), with a residual pressure of 78 psi.

There are no recycled water lines that currently serve the project site. Recycled water lines are present in the general site area. The nearest recycled water main lines are located west of the site, near Fair Oaks Park and the intersection of Duane Avenue and North Wolfe Road/Fair Oaks Boulevard, as well as near the intersection of US 101 and Fair Oaks Boulevard.

2.11.1.2 Wastewater Treatment/Sanitary Sewer

The following discussion is based on a sanitary sewer system analysis prepared by *Mark Thomas and Company* as of September 2006. A complete copy of this report is provided in Appendix K of this EIR.

The Sunnyvale Water Pollution Control Plant (WPCP) provides wastewater treatment, manages storm water discharges to local streams and channels, and regulates industrial and commercial discharges to the sanitary sewer system. The plant's total capacity is 29.5 million gallons per day (mgd) of sewage. In the event that the total load to the WPCP reaches 25.3 mgd, then a plant design and expansion review would be required. The current influent flow to the WPCP averages 15.3 million gallons per day, based on 2005 data.[16]

The project site is currently served by the City of Sunnyvale municipal sewer system, which collects the waste water from the existing industrial uses. The existing system consists of 10- to 18-inch pipes within the existing right of way of Duane Avenue, Stewart Drive, North Wolfe Road, DeGuigne Drive, and East Duane Avenue. These pipelines connect to the 27-inch trunk line in Lawrence Expressway through an 18-inch pipeline in Duane Court and a 10-inch pipeline in East Duane Avenue.

Existing flows in the vicinity of the site were monitored for approximately two weeks in July-August 2006. The weekday average and peak dry weather flows at the 27-inch line downstream of the site were 2,410 gallons per minute (gpm) and 3,407 gpm, respectively. The existing weekend average and peak dry weather flows were 2,467 gpm and 3,454 gpm, respectively.[17] The peak weekend flow translated to approximately 55 percent of the capacity of the 27-inch trunk line in Lawrence Expressway. Refer to Appendix K for additional detail regarding the existing flow measurements. It should be noted that the flows measured were based on the current existing conditions. These flows do not account for the

[16] Lorrie Gervin. Environmental Division Manager. City of Sunnyvale, Written communications. 4 May 2006.
[17] V&A Consulting Engineers. Sanitary Sewer Flow Monitoring and Capacity Analysis, City of Sunnyvale. Prepared for Mark Thomas & Company. September 2006. p. 5-6. (Per Table 1, peak weekend flow calculated as 1.40 x average weekday flow.)

fact that some of the industrial and office uses in the site vicinity may be vacant or not fully occupied. The full occupancy of these buildings could occur at any time without additional environmental review or analysis.

2.11.1.3 Storm Drainage Systems

The City provides and maintains storm drainage lines in the project site area. The City's storm drain system is for the control of flooding only, and the water that enters the drains is not treated before emptying into local creeks that flow to South San Francisco Bay. The storm drainage system near the site funnels runoff to Duane Avenue and Lawrence Expressway where 42-inch drain leads to a 72-inch drain in Lakeside Drive. Runoff from the site eventually drains to the Calabazas Creek. The existing site consists of 83 percent impervious surfaces and 17 percent pervious surfaces (refer to Section *2.3 Hydrology and Flooding*).

2.11.1.4 Solid Waste

State law AB 939 required that California cities divert 50 percent of their waste from landfill disposal by the year 2000. The City of Sunnyvale met that 50 percent goal in 1996, and is now working to maintain or exceed its current 56 percent diversion rate.[18]

An important component of the City's diversion effort for franchised wastes is the Sunnyvale Materials Recovery and Transfer Station (SMaRT), where recyclables and yard trimmings are sorted, processed and marketed. The remaining garbage is hauled to Kirby Canyon Landfill in San José for disposal.[19] In 2004, the remaining capacity at Kirby Canyon Landfill was 5,081,867 tons of waste. It is officially estimated that Kirby Canyon Landfill will reach capacity by 2022.[20] However, the Kirby Canyon site has the potential for significant expansion beyond that date, so long as the site operator wishes to continue and can obtain necessary regulatory approvals. In 2004, the City was allocated to dispose 138,301 tons of waste at Kirby Canyon Landfill; it delivered 89,007 tons.[21]

Solid waste and recycling collection services for residences and businesses in Sunnyvale are provided by the City by way of a franchised service provider, and wastes generated by the project would be removed by the franchised hauler. Generally during construction and demolition of large projects, significant quantities of waste are generated. An exclusion to the franchise, however, allows construction and demolition contractors to remove wastes generated during their work using their own vehicles and employees. Because of the large amount of construction and demolition waste typically generated by large projects, and because the City does not control waste hauled under this exclusion, there is potential for large amounts of demolition and construction debris to be disposed at landfills.

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[18] City of Sunnyvale. Solid Waste and Recycling. 14 March 2005. http://sunnyvale.ca.gov/Departments/Public+Works/Solid+Waste+and+Recycling/home.htm#Goals.

[19] City of Sunnyvale. Solid Waste and Recycling. 14 March 2005. http://sunnyvale.ca.gov/Departments/Public+Works/Solid+Waste+and+Recycling/home.htm#Goals.

[20] State of California Integrated Waste Management Board. Active Landfills Profile for Kirby Canyon Recycl. & Disp. Facility (43-AN-0008). 30 March 2005. http://www.ciwmb.ca.gov/Profiles/Facility/Landfill/LFProfile1.asp?COID=41&FACID=43-AN-0008.

[21] Bentley, Gail. Solid Waste Division Operations Specialist, Department of Public Works, City of Sunnyvale. Written communications. 2005.

The existing industrial uses on the overall site are currently estimated to generate roughly 35 tons per week, or roughly 300 cubic yards per week, of solid waste.[22]

2.11.1.5 Electricity and Natural Gas Services

Electric and natural gas service is currently provided to the existing uses on the site by Pacific Gas and Electric. There are natural gas lines located throughout the property.

2.11.2 Utilities and Service Impacts

2.11.2.1 Thresholds of Significance

For the purposes of this project, a utility impact is considered significant if the project will:

- Require or result in the construction of a new storm water or wastewater facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; or
- Result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments; or
- Need new or expanded entitlements for water supplies; or
- Be served by a landfill with insufficient permitted capacity; or
- Generate waste before or after project completion in a quantity sufficient to negatively affect the City's compliance with State law or Solid Waste Goal 3.2B; or
- Not comply with Federal, state, and local statutes and regulations related to solid waste.

2.11.2.2 Impacts from General Plan Amendment and Specific Development Projects

The project site is currently occupied by approximately 1,486,879 square feet of industrial office and R&D uses. Because the proposed GPA scenario would allow for substantially more development than the two specific development projects, in order to be conservative, the discussion below focuses on the impacts that would result from the overall buildout of the site under the proposed *Industrial-to-Residential (ITR)* designation. This designation would allow the redevelopment of the site with up to 2,842 residential units and up to 105,000 square feet of retail uses.

Water Service

Increased Water Demand
and Impacts to Availability of Water Supply

Senate Bill 610 (2001), codified at Water Code Section 10910 et seq., requires that certain water supply and demand information be the prepared for "projects" which are the subject of an EIR. Water Code Section 10912 defines a "project" as, *inter alia*, a proposed residential development of more than 500 dwelling units. The project which is the subject of this EIR is

[22] Bentley, Gail. Solid Waste Division Operations Specialist, Department of Public Works Written communications. September-October 2006.

considered a "project" as defined by Section 10912 because it is proposed to include up to 2,842 dwelling units and up to 105,000 square feet of retail uses.

The change in water demand resulting from the proposed GPA project was estimated based on the water rates of the proposed land uses under the GPA scenario. The total water demand for the project site would be approximately 527 AFY, which would increase the total water demand in the City to 25,827 AFY. The increase in demand resulting from the project would represent a 2.2 percent increase in total water demand for the City (refer to Appendix J).

The project site is located in a part of the City primarily served by imported water from the SFPUC. This additional water demand could be met by increased deliveries from SFPUC. The City of Sunnyvale is entitled to 16,800 AFY of water from the SFPUC. Current deliveries from SFPUC are 10,868 AFY, but have been up to 16,287 AFY in the past.[23] In the case of a temporary interruption of the SFPUC system, water from other sources (SCVWD, ground water, or from nearby cities) could be used as supplemental sources. Therefore, the projected water demand from the proposed GPA scenario could be accommodated through existing available water supplies.

Please refer to Appendix J for the complete SB 610 WSA and additional detail regarding the methodology of this analysis as well as the projected water demand from the project. The projected water supply scenarios for the City in normal, single-dry, and multiple-dry years are also provided in Appendix J, as required by SB 610.

Impacts to Existing Water Lines

As described above and in Section *I. Description of the Project*, buildout of the project site under the proposed GPA scenario would result in redevelopment of the site with up to 2,842 residential units and up to 105,000 square feet of retail uses. Development of the 2,842 residential units would generate a water demand of 710,500 gallons per day, or approximately 493 gpm.[24] Peak flow demands were also estimated as double the average demand rate. Therefore, peak flow demands would be approximately 986 gpm, which is well within the operational range of the existing system, measured at approximately 1,400 gpm at a single point of delivery. Development of the retail area would generate a maximum demand of approximately 25,056 gallons per day or 17.4 gpm, which, even when combined with the residential units, is well within the capacity of the existing water system (refer to Appendix J).

The existing water distribution system was also evaluated for its ability to provide water for fire protection. A fire flow demand of 2,500 gpm from two or more hydrants was assumed for the base requirement. The City's Department of Public Safety also requires a minimal residual pressure of 20 psi when the flows are being extracted from the system. The flow test information described above for the hydrants near the intersection of Stewart Drive and Santa Trinita Avenue, with 1,414 and 1,443 gpm with a residual pressure of 78 psi, meet this requirement.

[23] Todd Engineers. Draft Water Supply Assessment for City of Sunnyvale Industrial to Residential Conversion, April 4, 2006.

[24] Mark Thomas & Co. East Sunnyvale ITR Project Water System Analysis. April 2006. p.2. Calculated conservatively as (2,842 units) x (250 gallons per day) = 710,500 million gallons per day.

In order to further evaluate fire flow capacity of the existing distribution system, the system was modeled with the existing pipe sizes, lengths, and static pressure. The modeling showed that the existing distribution system has the capacity to meet the demand from redevelopment of the project site (refer to Appendix J).

The project will install water lines and connections on the site to serve the proposed project, in conformance with City standards and the California Plumbing Code.

IMPACT UTIL-1: Based on the above discussion, the proposed GPA would not result in significant water supply impacts. (Less Than Significant Impact) The proposed GPA would not result in impacts to the capacity of the water distribution system. (Less Than Significant Impact)

Wastewater Treatment/Sanitary Sewer

As described above and in Section *I. Description of the Project*, buildout of the project site under the proposed GPA scenario would result in redevelopment of the site with up to 2,842 residential units and up to 105,000 square feet of retail uses. Development of the 2,842 residential units would produce approximately 710,500 gallons per day, or approximately 1.1 cubic feet per second (cfs) of effluent.[25] Peak flow discharges were also estimated to be approximately 2.49 million gallons per day or 3.85 cfs. Under the assumptions in the sewer analysis (Appendix K), development of the retail area would generate a maximum of approximately 25,056 gallons per day or 0.388 cfs.[26] Refer to Appendix K for additional detail regarding these calculations.

These discharge amounts were compared to the capacities of the existing sanitary sewer lines in the project area. Conversion of the site to residential and commercial uses would increase the peak sewage flows in the sanitary sewer system at and immediately downstream of the site. The anticipated increase in peak sewage flows resulting from buildout of the proposed GPA scenario could exceed the downstream capacity of the 27-inch trunk line in Lawrence Expressway. In addition, several of the existing sewer distribution lines located on and immediately adjacent to the site would not have the capacity to convey sewer flows from buildout of the proposed GPA scenario (refer to Appendix K). Therefore, buildout of the proposed GPA scenario could result in significant impacts to the sanitary sewer system.

The net increased amount of sewage from the proposed project would not significantly impact the current influent flow to the WPCP.

IMPACT UTIL-2: Buildout of the proposed project would increase sewage flows from the site and these flows could exceed the downstream capacity of the existing sewer system and the capacity of the sewer mains in the immediate site area. (Significant Impact) The sewage generated by the proposed project would not exceed the treatment capacity at the WPCP. (Less Than Significant Impact)

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[25] Mark Thomas & Co. East Sunnyvale ITR Project Water System Analysis. September 2006. p.2. Calculated conservatively as (2,842 units) x (250 gallons per day) = 710,500 million gallons per day.

[26] The sewer analysis in Appendix K conservatively assumed a maximum FAR for the retail area of 50 percent, which would allow for the development of 208,500 square feet of retail uses. However, the project only proposes development of up to 105,000 square feet of retail on this portion of the site, at a maximum FAR of 35 percent. Therefore, the proposed retail would likely generate approximately 12,600 gallons per day of sewage.

Storm Drainage Systems

As discussed in Section *2.3 Hydrology and Water Quality*, the proposed redevelopment of the site with residential uses project would result in a decrease in impervious surfaces on the site, therefore, the proposed project would decrease the amount of runoff compared to existing conditions. Therefore, the project would also not significantly affect the predicted flood flows downstream of the site (refer to Section *2.3 Hydrology and Water Quality*). For these reasons, the proposed project would not exceed the capacity of the City's existing storm drainage system. The proposed project will be required to install storm drain lines and facilities on the site for collecting and managing storm water runoff, in conformance with City policies.

As described in Section *2.3 Hydrology and Water Quality*, the specific development project proposed at the AMD site would increase the amount of impervious surface at the site as compared to the existing conditions. The projected increase in runoff; however, would be insignificant and would not create an impact on the storm drain capacities and street flow depths (see Appendix C).

IMPACT UTIL-3: Because the proposed project would generate less runoff than under existing conditions, the proposed project would not impact the storm drainage system. (Less Than Significant Impact)

Solid Waste

The demolition of the existing buildings on the site would generate large quantities of waste, which would contribute to the total amount of waste generated by the City and may negatively affect the City's waste diversion level as required by AB 939 and the Solid Waste Goal 3.2B.

With redevelopment under the proposed GPA scenario, the project site is estimated to generate a total of roughly 100.46 tons per week, or 860 cubic yards per week, of solid waste at completion. This would represent a net increase of up to roughly 65 tons, or 560 cubic yards per week, of solid waste per week as compared to the existing industrial uses.[27] Therefore, conversion of the site to residential uses would increase the generation of solid waste from the site. Residential waste typically contains less recyclable waste, and the materials it contains are more difficult to remove than from industrial and commercial waste. The project would make it more difficult to maintain the City's present diversion level, which was 61 percent in 2004.[28] However, based on waste allocation and delivery data for the City of Sunnyvale for 2004, the waste generated by the proposed project at completion would not exceed the City's allocation waste tonnage. It is therefore anticipated that the solid waste

[27] The estimated project waste generation was based on the following calculations: Residential Development = (2,842 residential units) x (an average of 2.4 people per unit) x (waste generation rate of 24.5 lbs per person per week); and Commercial/Retail Development = (waste generation rate of 0.046 lbs per square foot per day) x (105,000 square feet proposed retail development); one (1) cubic yard is equivalent to 200 lbs. Sources: 1) California Integrated Waste Management Board. Estimated Solid Waste Generation Rates for Service Establishments. 5 January 2004. 5 February 2004. http://www.ciwmb.ca.gov/wastechar/WasteGenRates/WGServic.htm.; and 2) City of Sunnyvale. The Crescent – Lakeside Specific Plan Final Environmental Impact Report. 2005.

[28] Bowers, Mark. City of Sunnyvale. Written communications. May 12, 2006.

collection, recycling, transfer, and disposal system has sufficient capacity to serve the proposed project after completion.

IMPACT UTIL-4: The demolition of the existing industrial buildings and the construction of the proposed project would generate large amounts of waste in the short-term. Operation of the proposed project would generate a net increase of solid waste from the site. There is, however, sufficient capacity at Kirby Canyon Landfill to serve the proposed project. (Less Than Significant Impact)

Electricity, Natural Gas, and Telephone Services Impacts

Facilities for providing telephone, electrical and natural gas services are built and maintained by the private utilities that provide these services under their franchise agreements with the State of California. New and expanded facilities are paid for from capital funds financed by fees paid by users. Construction of the proposed development would result in an increase in the demand for electric and natural gas service on the site, as compared with existing conditions. Given the urban location of the site, and the fact that electric and natural gas service is currently provided to the site area, the provision and expansion of service for the project would not present a significant impact. All of the utility providers are required to monitor growth patterns and plans of the urban jurisdictions in Santa Clara County, including the City of Sunnyvale. Given the developed nature of the site, the site location within the urban envelope, and the presence of existing electricity, natural gas, and telephone service at the site, it is not anticipated that any of the utility companies would have significant difficulty expanding infrastructure to serve development allowed by the City and County General Plans.

IMPACT UTIL-5: Development of residential and commercial uses on the site would result in an increase in demand for electrical, gas, and telephone service, but would not result in a need for significant new infrastructure on or near the site. (Less Than Significant Impact)

2.11.3 General Plan Policies and Actions

The policies and actions of the City of Sunnyvale General Plan have been adopted for the purpose of avoiding or mitigating potential environmental effects resulting from planned development within the City. The City of Sunnyvale General Plan *Community Development Element* and *Environmental Management Element* (adopted 1993) contain policies and action statements related to utilities and services. Conformance with the following General Plan policies and actions from the *Community Design, Water Resources, and Solid Waste Sub-Elements* will reduce or avoid impacts to utilities and services:

2.11.3.1 Water Service

Community Design Sub-Element Action Statement 2.5C.3f states that the City should require adequate, attractive, water-wise, drought tolerant and efficiently irrigated landscaping and routinely review landscape standards.

Water Resources Sub-Element Policy 3.1A.1 states that the City should purchase Hetch-Hetchy and Santa Clara Valley Water District water in amounts dictated by existing and future demands, and economics.

Water Resources Sub-Element Action Statement 3.1A.2b states that the City should provide system controls which can respond to demand while also optimizing the mix of all sources of water in a cost effective manner.

Water Resources Sub-Element Policy 3.1B.1 states that the City should provide for an ongoing water conservation program.

2.11.3.2 Solid Waste

Solid Waste Sub-Element Action Statement 3.2B.1b states that the City should encourage and facilitate private source reduction programs, services, and facilities.

Solid Waste Sub-Element Policy 3.2B.2 states that the City should maximize diversion of solid waste from disposal by use of demand management techniques, providing and promoting recycling programs, and encouraging private sector recycling.

Solid Waste Sub-Element Action Statement 3.2B.4a states that the City should identify and support proposed laws and administrative actions that would increase the demand for and value of recycled materials in a cost effective manner.

2.11.4 Mitigation and Avoidance Measures

The project proposes the following measures:

2.11.4.1 Wastewater Treatment/Sanitary Sewer

MITIGATION MEASURE UTIL-1: As described in the *Impacts* discussion above, buildout of the proposed GPA scenario could exceed the capacity of the downstream sanitary sewer system in Lawrence Expressway. Additional testing of the capacity of the existing downstream sewer facilities in Lawrence Expressway is currently underway to determine what, if any, increase in capacity is necessary to accommodate the project. Analysis of this additional testing will be made as part of the final report. The mitigation for this impact would be to increase the capacity of the Lawrence Expressway trunk line, through construction of a parallel line for the length of the capacity constraint. The project proponents on the overall ITR site would be required to contribute their proportionate fair-share of funds to implement the necessary sewer system improvements.

MITIGATION MEASURE UTIL-2: When additional development projects are proposed on the site, all future development projects shall complete site-specific engineering and design of the sanitary sewer system on-site, and shall determine the most appropriate method for connecting to the downstream trunk line(s) in Lawrence Expressway, to the satisfaction of the Director of Public Works. Each site-specific future development project would be responsible for installing any sewer line upgrades or connections deemed necessary by the City to accommodate the anticipated peak loads.

2.11.4.2 Solid Waste

MITIGATION MEASURE UTIL-3: The project shall implement the City approved Waste Management Plan to be prepared for the project, which will include recommendations regarding facility design for on-going waste and recycling management systems.

The Waste Management Plan shall also include recommendations for recycling demolition wastes and reusing or recycling unused construction materials. The Plan shall describe the projected quantities of waste generated during demolition and construction, how much of those materials will be reused, recycled, or otherwise diverted from landfills, and where unrecycled materials will be disposed. Upon completion, the project shall provide the City with a report summarizing the waste type, quantity, disposition (e.g., recycled or landfilled) and facility used, to document execution of the plan.

MITIGATION MEASURE UTIL-4: Each development project shall include waste and recycling receptacles around the project site. The proposed Homeowners Associations shall hire staff to keep the site clean.

2.11.5 Conclusion

UTIL-1: The proposed GPA would not result in significant water supply impacts. **(Less Than Significant Impact)** The proposed GPA would not result in impacts to the capacity of the water distribution system. **(Less Than Significant Impact)**

UTIL-2: The proposed project would increase sewage flows from the site, and these flows could exceed the capacity of the existing downstream sewer system as well as the capacities of the sewer mains in the immediate site area. Implementation of the mitigation measures identified above would reduce these impacts to a less than significant level. **(Less Than Significant Impact with Mitigation Incorporated)** The sewage generated by the proposed project would not exceed the downstream sewer capacity or the treatment capacity at the WPCP. **(Less Than Significant Impact)**

UTIL-3: Because the proposed project would generate less runoff than under existing conditions, the proposed project would not impact the storm drainage system. **(Less Than Significant Impact)**

UTIL-4: The demolition of the existing industrial buildings and the construction of the proposed project would generate large amounts of waste in the short-term. Operation of the proposed project would generate a net increase of solid waste from the site. There is, however, sufficient capacity at Kirby Canyon Landfill to serve the proposed project. **(Less Than Significant Impact)**

UTIL-5: Development of residential and commercial uses on the site would result in an increase in demand for electrical, gas, and telephone service, but would not result in a need for significant new infrastructure on or near the site. **(Less Than Significant Impact)**

2.12 ENERGY

This section was prepared pursuant to CEQA Guidelines Section 15126(c) and Appendix F (Energy Conservation of the Guidelines), which require that EIRs include a discussion of the potential energy impacts of proposed projects with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy.

2.12.1 Introduction

Energy consumption is analyzed in an EIR because of the environmental impacts associated with its production and usage. Such impacts include the depletion of nonrenewable resources (e.g., oil, natural gas, coal, etc.) and emissions of pollutants during both the production and consumption phases.

Energy usage is typically quantified using the British Thermal Unit (BTU).[29] As points of reference, the approximate amount of energy contained in a gallon of gasoline, a cubic foot of natural gas, and a kilowatt hour (kWhr) of electricity are 123,000 BTUs, 1,000 BTUs, and 3,400 BTUs, respectively.

Energy conservation is embodied in many Federal, State and local statutes and policies. At the Federal level, energy standards apply to numerous products (e.g., the *EnergyStar™* program) and transportation (e.g., fuel efficiency standards). At the State level, Title 24 of the California Administrative Code sets forth energy standards for buildings and rebates/tax credits for installation of renewable energy systems, and the *Flex Your Power* program promotes conservation in multiple ways. At the local level, the City's General Plan includes goals and policies whose objectives include reduction in energy usage. The project's consistency with theses goals and policies are discussed in *Section 1.6 Consistency with Plans and Policies.*

2.12.2 Existing Setting

Total energy usage in California was 8,519 trillion BTUs in the year 2000, which equates to an average of 252 million BTUs per capita. Of California's total energy usage in 2000, the breakdown by sector was 15 percent residential, 14 percent commercial, 35 percent industrial, and 36 percent transportation. This energy was primarily supplied in the form of coal (2.9 million tons), natural gas (2.3 trillion cubic feet), petroleum (647 million barrels), nuclear electric power (35.2 trillion kWhr), and hydroelectric power (42.8 trillion kWhr).

Given the nature of the proposed project (i.e., a land use decision in Sunnyvale), the remainder of this discussion will focus on the three most relevant sources of energy: electricity for residential and commercial uses, natural gas for residential and commercial uses, and gasoline for vehicle trips associated with residential and commercial uses.

[29] The British Thermal Unit (BTU) is the amount of energy that is required to raise the temperature of one pound of water by one degree Fahrenheit.

2.12.2.1 Electricity

Energy consumption in California grew from 250,241 gigawatt hours (GWh) in 2001 to 270,927 GWh in 2004. Electricity consumption is forecasted to increase between 1.2 and 1.5 percent annually, from 270,927 GWh in 2004 to between 310,716 and 323,372 GWh by 2016.[30] In 2004, electricity was produced from power plants fueled by natural gas (41 percent), coal (21 percent), hydro (17 percent), nuclear (13 percent), geothermal (five percent) and renewables (four percent). California relies heavily on imported electricity from both the southwest and the Pacific Northwest.

According to the California Energy Commission's *2005 Integrated Energy Policy Report*, maintaining adequate electricity reserves will be difficult over the next few years due to potential impacts of higher-than-average summer temperatures, shortages resulting from decreased hydroelectric generation in lower-than-average precipitation years, and retirement of aging natural gas-fired power plants.[31] By 2016, California utilities will need to procure approximately 24,000 MW of peak resources to replace expiring contracts, retiring power plants, and meet peak demand growth. This amount would maintain a 15 to 17 percent reserve margin.[32]

Electricity usage in California for differing land uses varies substantially by the type of uses in a building, type of construction materials used in a building, and the efficiency of all electricity-consuming devices within a building. The average annual usage of electricity is roughly 6,500 kWhr/residence. The average annual usage of electricity is roughly 18 kWhr/square foot for office buildings.

Electricity supply in California involves a complex grid of power plants and transmission lines located in the Western United States, Canada, and Mexico. The issue is complicated by market forces that have become prominent since 1998, which is when a new regulatory environment commonly referred to as "deregulation" took effect in California. Supply is further complicated by the fact that the peak demand for electricity is significantly higher than the off-peak demand. For example, in August 2004, peak electric demand - due in large part to hot weather - reached a record high of 44,497 megawatts, which is almost double the lowest demand period.

In 2000-2001, electric demand exceeded supply on various occasions, which required utilities to institute systematic rotating outages to maintain the stability of the grid and to prevent widespread blackouts. Since that time, additional generating capacity has come on-line and upgrades to various transmission lines are occurring.

2.12.2.2 Natural Gas

In 2001, California used almost 2.4 trillion cubic feet of natural gas. In 2004, the natural gas was used to produce electricity (50 percent), in industrial uses (18 percent), in commercial uses (nine percent), in residential uses (22 percent), and for transportation (less than one percent).

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[30] California Energy Commission. 2005 Integrated Energy Policy Report. November 2005. Pages 38-39.
[31] California Energy Commission. 2005 Integrated Energy Policy Report. November 2005. Page E-2.
[32] California Energy Commission. 2005 Integrated Energy Policy Report. November 2005. Page 46.

Natural gas usage in California for differing land uses varies substantially by the type of uses in a building, type of construction materials used in a building, and the efficiency of all gas-consuming devices within a building. The average annual usage of natural gas is roughly 45,000 cubic feet/residence. The average annual usage of natural gas is roughly 29 cubic feet/square foot for office buildings.

California imports 87 percent of its natural gas supplies from other states and Canada. California's natural gas supplies are increasingly threatened by declining production in the US and growing demand in neighboring states.[33] Meeting peak demand under extreme weather conditions may require gas infrastructure improvements (e.g., additional pipeline capacity) earlier than currently programmed.

2.12.2.3 Gasoline for Motor Vehicles

In 2004, Californians consumed roughly 15.4 billion gallons of gasoline and 2.8 billion gallons of diesel. This is a 50 percent increase over the amount that was used 20 years ago. The primary factors contributing to this increase are: 1) population growth and more on-road vehicles, 2) low per-mile cost of gasoline for the past two decades, 3) lack of alternatives to conventional gasoline and diesel fuels, 4) consumer preference for larger, less fuel-efficient vehicles, and 5) land-us planning that places jobs and housing farther apart without transportation integration.[34]

The average fuel economy for the fleet of light-duty vehicles (autos, pickups, vans, and SUVs) steadily increased from about 12.6 miles-per-gallon (mpg) in the mid-1970s to the current 20.7 mpg. No further improvements in the average fuel economy for the overall fleet, however, are projected through the year 2020. This conclusion is based on the fact that projected increases in the number of fuel efficient cars (e.g., hybrids) will be offset by projected increases in the number of SUVs, pickups, and vans.

Although no new refineries have been constructed in California since 1969, supply has kept pace with demand though a combination of refinery upgrades/modernizations, and out-of-State imports.

According to the California Energy Commission's *2003 Integrated Energy Policy Report*, the demand for gasoline and diesel for on-road vehicles is projected to increase by 36 percent over the next 20 years. Imports of foreign crude oil will increase as in-State and Alaskan supplies diminish. Since California refineries are already operating close to their full capacity, daily imports of refined gasoline and diesel are expected to double over the next 20 years. Unless out-of-State facilities expand, the gasoline and diesel markets will become increasingly volatile, with the likelihood of shortages and more prolonged periods of high prices.

[33] California Energy Commission. 2005 Integrated Energy Policy Report. November 2005. Page 137.
[34] California Energy Commission. 2005 Integrated Energy Policy Report. November 2005. Page 7.

2.12.3 Energy Impacts

2.12.3.1 Thresholds of Significance for Energy Impacts

For the purposes of this project, an energy impact is considered significant if the project would:

- Use fuel or energy in a wasteful manner;
- Result in a substantial increase in demand upon energy resources in relation to projected supplies; or
- Result in longer overall distances between jobs and housing.

2.12.3.2 General Plan Amendment and Specific Development Project Impacts

Under the proposed *Industrial-to-Residential (ITR)* combining district designation, new residential, commercial and/or industrial uses could be built on the site. Therefore, the proposed redevelopment of the site would require demolition of the existing industrial buildings and could result in the development of up to 2,842 residences, in conformance with the City's *R-3* and *R-4* zoning designations, and up to 105,000 square feet of commercial uses, or new industrial developments. Energy will be consumed during both the construction and operational phases of these uses. The demolition and construction phase will require energy for the manufacture and transportation of building materials, preparation of the site (e.g., demolition of the existing buildings and grading), and the actual construction of the buildings. The operational phase will consume energy for multiple purposes including, but not limited to, building heating and cooling, lighting, appliances, electronics, and commercial machinery. Operational energy will also be consumed during each vehicle trip associated with these proposed uses. Rough estimates of operational energy usage by the proposed project are provided in Table 24 below.

The energy usage shown in Table 24 is a small percentage of the energy consumed in Sunnyvale as a whole. As described previously, the site is currently occupied by industrial uses. As shown in Table 24 below, the existing industrial development uses roughly 26.7 million kWhr/year of electricity and 43.1 million ft^3/year of natural gas. Although the project would result in the additional use of approximately 270,684 gallons of gasoline a year, the project proposes to place housing near jobs, which would reduce the number of vehicle miles traveled and the amount of gasoline used.

The redevelopment of the site would incrementally increase energy use by roughly 88.7 million ft^3/year of natural gas and 270,684 gallons/year of gasoline. The redevelopment of the site would actually result in a net decrease in electricity usage, of roughly 6.8 million kWhr/year.

IMPACT ENER-1: While the project would result in increased energy usage on the site, this increase would not be substantial when compared to overall energy used in the City of Sunnyvale. Given the developed nature of the site, its infill location, and the density of the proposed development, the project would not use fuel or energy in a wasteful manner, and the project would not result in significant energy impacts. (Less Than Significant Impact)

TABLE 24: ESTIMATED AVERAGE ANNUAL ENERGY USAGE			
Land Use	**Average Usage/Unit**	**Units**	**Additional Annual Energy**
Existing Land Use			
Industrial/Office			
Electricity	18 kWhr/ft^2/year	≈ 1,486,879 ft^2	26.7 million kWhr/year
Natural Gas	29 ft^3/ft^2/year	≈ 1,486,879 ft^2	43.1 million ft^3/year
Proposed Land Uses			
Residential			
Electricity	6,500 kWhr/du/yr	Up to 2,842 du	18.5 million kWhr/year
Natural Gas	45,000/ft^3/du/year	Up to 2,842 du	127.9 million ft^3/year
Commercial			
Electricity	13 kWhr/ft^2/year	Up to 105,000 ft^2	1,365,000 kWhr/year
Natural Gas	37 ft^3/ft^2/year	Up to 105,000 ft^2	3,885,000 ft^3/year
Transportation			
Gasoline	0.048 gallons/mile	5,150 Net New Daily trips	270,684 gallons/year
Total Net Increase in Energy Usage **[(Proposed Uses)– (Existing Uses)]**		Electricity Natural Gas Gasoline	(6.8 million kWhr/year) 88.7 million ft^3/year 270,684 gallons/year

Notes:
du= dwelling unit(s), ft^2= square feet, ft^3= cubic feet, kWhr=kilowatt hour

Average vehicle trip length is estimated to be approximately three (3) miles

These data are rough estimates. Actual energy usage could (and will) vary substantially depending upon factors such as the type of uses that ultimately occur on the site, actual miles driven by future residents or employees, and the degree to which energy conservation measures are incorporated into the facilities on-site.

Numbers in parentheses are net decreases.

2.12.4 General Plan Policies and Actions

The policies and actions of the City of Sunnyvale General Plan have been adopted for the purpose of avoiding or mitigating potential environmental effects resulting from planned development within the City. The *Land Use and Transportation Sub-Element*, the *Housing and Community Revitalization Sub-Element*, and the *Community Design Sub-Element* of the City of Sunnyvale General Plan, as well as the City's *Sustainable Development and Green Buildings Policy (Policy 1.1.9)* contain policies and action statements related to energy. Conformance with the following General Plan policies and actions from the *Land Use and Transportation Sub-Element*, the *Housing and Community Revitalization Sub-Element*, and the *Community Design Sub-Element*, as well as the City's *Sustainable Development and Green Buildings Policy (Policy 1.1.9)*, will reduce or avoid impacts to energy:

Land Use and Transportation Sub-Element Land Use Policy R1.11 states that the City should protect regional environmental resources through local land use practices.

Housing and Community Revitalization Sub-Element Policy C.8 states that the City should continue to promote environmentally sound energy programs.

Housing and Community Revitalization Sub-Element Policy C.8a states that the City should continue to enforce State (Title 24) energy requirements for new construction.

Housing and Community Revitalization Sub-Element Policy C.8.b states that the City should continue to enforce requirements for solar water heating in new construction *(Municipal Code, Chapter 16.46).*

Community Design Sub-Element Action Statement C.2.a states that the City should encourage site design which preserves scenic vistas and maximizes solar orientation for heating and cooling.

Community Design Sub-Element Action Statement C.2.d states that the City should continue to require that on-site lighting be energy efficient, unobtrusive and located to minimize off-site glare while providing adequate night time safety.

Sustainable Development and Green Buildings Policy Statement 2 states that new residential construction shall be encouraged to use the Alameda County Waste Management Authority's *Home Remodeling: Green Building Guidelines* for green building design and construction techniques.

Sustainable Development and Green Buildings Policy Statement 3 state that the City should provide incentives for industrial/office development to incorporate green building design practices.

2.12.5 State Law

All new buildings shall be constructed to meet the requirements of Title 24 of the California Administrative Code, as it pertains to energy efficiency.

2.12.6 Programmed Mitigation Measures

MITIGATION MEASURE ENER-1: To the extent feasible, the two proposed residential development projects, as well as all future residential development and industrial development on the ITR site, will be constructed and operated in accordance with the City of Sunnyvale's current green building/energy efficiency practices, to the satisfaction of the Director of Community Development.

2.12.7 Conclusion

ENER-1 The project would not result in significant energy impacts. Implementation of the above General Plan policies and programmed measures would further reduce energy impacts of project construction and operation. **(Less Than Significant Impact)**